CLAIMS

What is claimed is:

1. A receiver portion for selectively converting a GPS signal and a second rf signal to a lower frequency signal in a wireless handset, comprising:

a GPS control signal generator for generating a GPS control signal;

a band select switch coupled to the GPS control signal generator for selecting the GPS signal or the second rf signal, responsive to the GPS control signal;

a mixer coupled to the band select switch for receiving the selected signal and to a local oscillator for converting the selected signal to the lower frequency signal;

a GPS antenna assembly for receiving the GPS signal; and

a second rf signal antenna assembly for receiving the second rf signal.

2. The receiver portion of claim 1, wherein the GPS antenna assembly and the second rf signal antenna assembly comprise the same antenna assembly.

3. The receiver portion of claim 1, wherein the second rf signal is a PCS signal.

4. The receiver portion of claim 1, wherein the lower frequency signal is an IF signal.

5. The receiver portion of claim 4, wherein the second rf signal is a PCS signal.

6. The receiver portion of claim 4, further comprising:

an IF filter constructed to filter the IF signal.

7. The receiver portion of claim 6, wherein:

a low side injection of a local oscillator is used for mixing the GPS signal down to the IF signal.

8. The receiver portion of claim 7, wherein:

an oscillating frequency of the local oscillator is substantially equal to 1391 MHz.

9. The receiver portion of claim 5, wherein:

a high side injection of a local oscillator is used for mixing the PCS signal down to the IF signal.

10. The receiver portion of claim 9, wherein:

an oscillating frequency of the local oscillator is substantially equal to 2144 MHz.

11. The receiver portion of claim 4, wherein:

the IF signal is substantially equal to 183.6 MHz.

12. The receiver portion of claim 3, further comprising:

a GPS low noise amplifier coupled to the GPS antenna and to the band select switch for amplifying the GPS signal;

a PCS low noise amplifier coupled to the PCS antenna and to the band select switch for amplifying the PCS signal;

a power supply for supplying power to the GPS low noise amplifier and to the PCS low noise amplifier

wherein:

the GPS control signal generator is coupled:

to a power line of the GPS low noise amplifier for coupling the power supply to the GPS low noise amplifier when the GPS control signal is on and;

to a power line of the PCS low noise amplifier for coupling the power supply to the PCS low noise amplifier when the GPS control signal is off.

13. A receiver portion for converting an RF signal to an intermediate frequency signal in a wireless communication device, comprising:

a GPS control signal generator for generating a GPS control signal;

a diplexer for isolating a GPS signal from a second rf signal;

a local oscillator for generating a local oscillator signal;

a mixer, coupled to the diplexer for receiving the GPS signal and the second rf signal and to the local oscillator for receiving the local

oscillator signal, for converting the received signals into a lower frequency signal;

a lower frequency signal filter coupled to the mixer and constructed to transmit a lower frequency signal that is indicative of a selected signal that is a member of the group consisting of the GPS signal and the second rf signal;

a GPS antenna assembly for receiving the GPS signal; and

a second rf signal antenna assembly for receiving the second rf signal.

14. The receiver portion of claim13, wherein the GPS and the second rf signal antenna assemblies are the same antenna assembly.

15. The receiver portion of claim 13, wherein the lower frequency signal is an IF signal.

16. The receiver portion of claim 13, wherein the second rf signal is a PCS signal.

17. The receiver portion of claim 15, wherein the second rf signal is a PCS signal.

18. The receiver portion of claim 15, wherein:

a low side injection of the local oscillator is used for mixing the GPS signal down to the IF signal.

19. The receiver portion of claim 13, wherein:

an oscillating frequency of the local oscillator is substantially equal to 1391 MHz.

20. The receiver portion of claim 17, wherein:

a high side injection of the local oscillator is used for mixing the PCS signal down to the IF signal.

21. The receiver portion of claim 15, wherein:

the IF signal is substantially equal to 183.6 MHz.

22. The receiver portion of claim 16, further comprising:

a GPS low noise amplifier coupled to the GPS antenna and to the diplexer for amplifying the GPS signal;

a PCS low noise amplifier coupled to the PCS antenna and to the diplexer for amplifying the PCS signal;

a power supply for supplying power to the GPS low noise amplifier and to the PCS low noise amplifier

wherein:

the GPS control signal generator is coupled to a power line of the GPS low noise amplifier and to a power line of the PCS low noise amplifier for coupling the power supply to the GPS low noise amplifier when the GPS control signal is on and for coupling the power supply to the PCS low noise amplifier when the GPS control signal is off.

23. A receiver portion for converting a GPS signal and a second rf signal to an intermediate frequency signal comprising:

a GPS control signal generator for generating a GPS control signal;

a local oscillator source configured to generate a GPS local oscillator signal and a second rf signal local oscillator signal wherein the GPS control signal generator is coupled to the local oscillator source for selecting one of a member of a group consisting of the rf signal local oscillator signal and the GPS local oscillator signal;

a GPS antenna assembly for receiving the GPS signal;

a second rf signal antenna assembly for receiving the second rf signal;

a duplexer coupled to the GPS antenna assembly and to the second rf signal antenna assembly and configured to transmit the GPS signal and the second rf signal;

a mixer coupled to the local oscillator source and to the duplexer, the mixer constructed to convert the second rf signal to a first lower frequency signal and to convert the GPS signal to a second lower frequency signal;

a band pass filter coupled to the mixer, the filter configured to transmit one of a member of the group consisting of the first lower frequency signal and the second lower frequency signal.

24. The receiver portion of claim 23, wherein the GPS and second rf signal antenna assemblies are the same antenna assembly.

25. The receiver portion of claim 23, wherein the lower frequency signal is an IF signal.

26. The receiver portion of claim 23, wherein the second rf signal is a PCS signal.

27. The receiver portion of claim 25, wherein the second rf signal is a PCS signal.

28. The receiver portion of claim 26, further comprising:

a GPS low noise amplifier coupled to the GPS antenna assembly and to the duplexer for amplifying the GPS signal;

a PCS low noise amplifier coupled to the PCS antenna and to the duplexer for amplifying the PCS signal;

a power supply for supplying power to the GPS low noise amplifier and to the PCS low noise amplifier

wherein:

the GPS control signal generator is coupled to a power line of the GPS low noise amplifier and to a power line of the PCS low noise amplifier for coupling the power supply to the GPS low noise amplifier when the GPS control signal is on and for coupling the power supply to the PCS low noise amplifier when the GPS control signal is off.

29. The receiver portion of claim 25, wherein:

a low side injection of a local oscillator is used for mixing the GPS signal down to the IF signal.

30. The receiver portion of claim 23, wherein:

an oscillating frequency of the local oscillator is substantially equal to 1391 MHz.

31. The receiver portion of claim 27, wherein:

a high side injection of a local oscillator is used for mixing the PCS signal down to the IF signal.

32. The receiver portion of claim 26, wherein:

the IF signal is substantially equal to 183.6 MHz.

33. A receiver portion for receiving a GPS signal and a cellular CDMA signal comprising:

a GPS control signal generator for generating a GPS control signal;

a local oscillator source configured to generate a GPS local oscillator signal and a cellular CDMA local oscillator signal wherein the GPS control signal generator is coupled to the local oscillator source for selecting one of a member of a group consisting of the cellular CDMA local oscillator signal and the GPS local oscillator signal;

a GPS antenna assembly for receiving the GPS signal;

a cellular CDMA antenna assembly for receiving the cellular CDMA signal;

a first mixer coupled to the local oscillator source and to the GPS antenna assembly, the mixer constructed to convert the GPS signal to a first lower frequency signal;

a second mixer coupled to the local oscillator source and to the cellular CDMA antenna assembly, the mixer constructed to convert the GPS signal to a second lower frequency signal;

a band pass filter coupled to the first mixer and to the second mixer, the filter configured to transmit one of a member of the group consisting of the first lower frequency signal and the second lower frequency signal.

34. The receiver portion of claim 33, wherein the first lower frequency signal is an IF signal.

35. The receiver portion of claim 33, wherein the first and second mixers are the same mixer.

36. The receiver portion of claim 33 wherein the GPS and cellular CDMA antennas are the same antenna.

37. The receiver portion of claim 33, further comprising:

a GPS low noise amplifier coupled to the GPS antenna assembly and to the first mixer for amplifying the GPS signal;

a cellular CDMA low noise amplifier coupled to the cellular CDMA antenna assembly and to the second mixer for amplifying the cellular CDMA signal;

a power supply for supplying power to the GPS low noise amplifier and to the cellular CDMA low noise amplifier

wherein:

the GPS control signal generator is coupled to a power line of the GPS low noise amplifier and to a power line of the cellular CDMA low noise amplifier for coupling the power supply to the GPS low noise amplifier when the GPS control signal is on and for coupling the power supply to the cellular CDMA low noise amplifier when the GPS control signal is off.

38. The receiver portion of claim 34, wherein:

a low side injection of a local oscillator is used for mixing the GPS signal down to the IF signal.

39. The receiver portion of claim 38, wherein:

an oscillating frequency of the local oscillator is substantially equal to 1391 MHz.

40. The receiver portion of claim 34, further comprising:

a divide by two circuit coupled between the local oscillator source and the second mixer for dividing an initial local oscillator signal by two to produce the second local oscillator signal wherein:

a high side injection of a local oscillator is used for mixing the cellular CDMA signal down to the IF signal.

41. The receiver portion of claim 34, wherein:

the IF signal is substantially equal to 183.6 MHz.

42. The receiver portion of claim 33, further comprising:

a band select switch coupled between the GPS antenna assembly and the first mixer for selecting the GPS signal.

43. The receiver portion of claim 33, further comprising:

a diplexer coupled between the GPS antenna and the first mixer for coupling the GPS signal to the first mixer.

44. The receiver portion of claim 33, further comprising:

a duplexer coupled between the GPS antenna and the first mixer for coupling the GPS signal to the first mixer.

45. The receiver portion of claim 33, further comprising:

a second rf signal antenna assembly coupled to the first mixer for receiving a second rf signal and to the local oscillator for converting, responsive to the GPS control signal, either the GPS signal or the second rf signal to the first lower frequency signal.

46. The receiver portion of claim 45, wherein the second rf signal comprises a PCS signal.

47. The receiver portion of claim 45, wherein the lower frequency signal comprises an IF signal.

48. The receiver portion of claim 47, wherein the second rf signal comprises a PCS signal.

49. The receiver portion of claim 47, further comprising:

a divide by two circuit coupled between the local oscillator source and the second mixer for dividing an initial local oscillator signal by two to produce the second local oscillator signal wherein:

a high side injection of a local oscillator is used for mixing the cellular CDMA signal down to the IF signal.

50. A wireless handset, comprising:

a transceiver for transmitting and receiving a plurality of rf signals;

a battery coupled to the transceiver for supplying power to the transceiver; and

a case enclosing the transceiver and the battery,

the transceiver comprising:

an rf control signal generator for generating an rf control signal;

a band select switch coupled to the rf control signal generator for selecting between the plurality of rf signals, responsive to the rf control signal;

a mixer, coupled to the band select switch for receiving the selected signal and to a local oscillator, for converting the selected signal to an IF signal;

an antenna assembly coupled to the mixer for receiving the plurality of rf signals.

51. The wireless handset of claim 50, wherein the mixer is a passive mixer.

52. The wireless handset of claim 50, further comprising a low noise amplifier coupled between the band select switch and the mixer.

53. The wireless handset of claim 50, further comprising a low noise amplifier coupled between the mixer and an IF band pass filter.

54. The wireless handset of claim 50, wherein the plurality of rf signals comprises a GPS signal.

55. The wireless handset of claim 50, wherein the plurality of rf signals comprises a cellular CDMA signal.

56. The wireless handset of claim 50, wherein the plurality of rf signals comprises a GSM signal.

57. The wireless handset of claim 50, wherein the plurality of rf signals comprises a cellular CDMA signal and a GPS signal.

58. The wireless handset of claim 50, wherein the plurality of rf signals comprises a cellular CDMA signal, a GPS signal and a PCS signal.

59. A method of down converting a GPS signal to an intermediate frequency signal that is indicative of the GPS signal, comprising:

providing a mixer configured to convert a second rf signal and the GPS signal to a lower frequency signal;

mixing, using the mixer, the second rf signal with a first local oscillator signal;

generating a GPS control signal;

decoupling the second rf signal from the mixer, responsive to the GPS control signal;

mixing, using the mixer, the GPS signal with a second local oscillator signal.

60. The method of claim 59, wherein the second rf signal comprises a PCS signal.

61. The method of claim 59, wherein the lower frequency signal comprises an IF signal.

62. The method of claim 61, wherein the second rf signal comprises a PCS signal.

63. The method of claim 62, further comprising:

producing a first IF signal, indicative of the PCS signal;

producing a second IF signal, indicative of the GPS signal;

providing a filter configured to filter the first IF signal and the second IF signal;

filtering, using the filter, the first IF signal.

filtering, using the filter, the second IF signal.

64. The method of claim 60, wherein the first step of mixing comprises:

injecting a local oscillator signal on a low side of the PCS signal.

65. The method of claim 60, wherein the second step of mixing comprises:

injecting a local oscillator signal on a high side of the GPS signal.

66. A method of using a mixer and a filter for processing both a GPS signal and a second rf signal comprising:

providing a mixer configured to receive the GPS signal and the second rf signal;

coupling the GPS signal and the second rf signal to the mixer;

generating a GPS control signal;

coupling a first local oscillator signal or a second local oscillator signal to the mixer responsive to the GPS control signal;

mixing, using the mixer, both the GPS signal and the second rf signal to a first IF signal and a second IF signal;

selecting, using an IF filter, either the first or the second IF signal for further processing.

67. The method of claim 66, wherein the step of mixing comprises:

injecting the first local oscillator signal on a high side of the GPS signal.

68. The method of claim 66, wherein the second rf signal comprises a PCS signal.

69. The method of claim 68, wherein the second step of mixing comprises:

injecting the second local oscillator signal on a low side of the PCS signal.